

## Precision pressure sensor Models CPT6100, CPT6180



WIKA data sheet CT 25.10

### Applications

- Testing technology
- Calibration technology
- Laboratories and maintenance shops
- Aviation

### Special features

- Accuracy up to 0.01 % IS-50
- Measuring range from -1 ... 400 bar / -15 ... 6,000 psi
- RS-232 or RS-485 interface
- Compact design



Precision pressure sensor model CPT6180

### Description

The models CPT6180 and CPT6100 precision pressure sensors are compact, robust sensors with a serial output and a measuring range which is freely selectable between -1 ... 400 bar / -15 ... 6,000 psi. The high accuracy of up to 0.01 % IS-50 for 365 days makes the sensor one of the most accurate transducers in precision measurement technology. The standard output mode provides the pressure values via a query-response process.

#### Application

These precision pressure sensors are built into OEM instruments, e.g. in pressure, flow or humidity calibrators, or in any instrument where high-accuracy measurement is needed. They are used as reference pressure sensors within the automated manufacturing of pressure measuring instruments or calibration stands. Through a high accuracy, speed of reading and long-term stability, these are particularly suited for applications in wind tunnels or in pressure chambers. These characteristics make it a valuable tool in metrology, hydrology, oceanography, and in the aviation and space industries.

#### Functions

The models CPT6180 and CPT6100 have an RS-232 or RS-485 interface. The RS-485 interface offers the possibility of a genuine multidrop connection and simple cabling. There are four different baud rates to choose from.

The sensors can be configured for gauge and absolute pressure for any measuring range within the specified limits. They have a wide voltage supply range (DC 6 ... 20 V) and low power consumption (< 0.5 W). With a recalibration time of 180 or 365 days and a high resolution of 6 or 7 significant figures, CPT6180 and CPT6100 are flexible enough to be used in a wide variety of applications.

#### Compact design

The pressure sensors are, due to their robust, compact design, easily integratable in a 19" rack without taking up much space. With the combination of male and female threads, a fast and secure fitting is always possible, negating the need for further sealing.

## Specifications

### Precision pressure sensor technology

Model	CPT6100	CPT6180	CPT6180
Accuracy <sup>1)</sup>	0.03 % FS	0.01 % FS	0.01 % IS-50 <sup>2)</sup>
<b>Measuring ranges</b>			
Gauge pressure	0 ... 25 up to 0 ... 70 mbar 0 ... 0.36 up to 0 ... 1 psi	0 ... ≥ 70 mbar up to 0 ... 400 bar 0 ... ≥ 1 up to 0 ... 6,000 psi	0 ... 1 up to 0 ... 400 bar 0 ... 15 up to 0 ... 6,000 psi
Bi-directional	-25 ... 25 up to -35 ... 35 mbar -0.36 ... 0.36 up to -0.5 ... 0.5 psi	-35 ... 35 mbar up to -1 ... 400 bar -0.5 ... 0.5 up to -14.5 ... 6,000 psi	-1 ... 10 up to 0 ... 400 bar -15 ... 145 psi up to 0 ... 6,000 psi
Absolute pressure	-	0 ... 500 mbar up to 0 ... 401 bar abs. 0 ... 7.5 psi up to 0 ... 6,015 psi abs.	0 ... 1 up to 0 ... 401 bar abs. 0 ... 15 up to 0 ... 6,015 psi abs.
Calibration interval	180 days	180 days	365 days

#### CPT6100 as barometric reference

Measuring range	552 ... 1,172 mbar abs. / 8 ... 17 psi abs.
Accuracy <sup>1)</sup>	0.01 % of reading
Calibration interval	365 days
Pressure units	psi, bar, mbar, Pa, kPa, hPa, MPa, tsi, atm, torr, Dynes/cm <sup>2</sup> , g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mSW, oz/in <sup>2</sup> , psf, tsf, mmH <sub>2</sub> O (4 °C), cmH <sub>2</sub> O (4 °C), mH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (60 °F), ftH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), ftH <sub>2</sub> O (60 °F), μmHg (0 °C), mmHg (0 °C), cmHg (0 °C), inHg (0 °C), inHg (60 °F), inSW (0 °C), ftSW (0 °C), mtorr (0 °C)

1) The accuracy is defined by the total measurement uncertainty, which is expressed with the coverage factor ( $k = 2$ ) and includes the following factors: the intrinsic performance of the instrument, the measurement uncertainty of the reference instrument, long-term stability, influence of ambient conditions, drift and temperature effects over the compensated range during a periodic zero point adjustment.

2) 0.01 % IS-50 accuracy: Between 0 ... 50 % of the measuring span, the accuracy is 0.01 % of half the measuring span and between 50 ... 100 % of the measuring span, the accuracy is 0.01 % of reading.

### Precision pressure sensor

<b>Case</b>	
Mounting position	< 1 bar negligible Can be adjusted through zero point adjustment (linear shift of the characteristic curve)
Dimensions	see technical drawings
Weight	505 g / 1.11 lb
<b>Display</b>	
Resolution	CPT6100: 6 significant figures CPT6180: 7 significant figures
Filter	Adjustable exponential filter from 0 ... 99 % The filter is only active within a defined range of 0.010 % FS.
Warm-up time	approx. 15 min up to the specified accuracy
<b>Connections</b>	
Pressure connections	Connection 7/16-20 SAE for pressure and reference port The reference port is sealed for absolute pressure sensors
Overpressure safety	10 % above the nominal pressure of the sensor
Material, wetted parts	Aluminium, brass, 316SS, Buna-N, Viton <sup>®</sup> , silicone grease, silicone rubber, nylon, ceramic, glass, silicon
<b>Voltage supply</b>	
Power supply	DC 6 ... 20 V; 45 mA for DC 12 V

Viton<sup>®</sup> fluorelastomer is a registered trademark of DuPont Performance Elastomers.

## Precision pressure sensor

### Permissible ambient conditions

Storage temperature	-20 ... +70 °C / -4 ... 158 °F
Humidity	0 ... 95 % r. h. (relative humidity, non-condensing)
Compensated temperature range	15 ... 45 °C / 59 ... 113 °F

### Communication

Interface	RS-232 or RS-485
Baud rates	9600, 19200, 38400 or 57600 baud
Signal output	Query and response
Measuring rate	Standard: 10 values/s Option: 50 values/s
Response time	Standard: 100 ms for a FS pressure pulse Option: 20 ms for a FS pressure pulse

## CE conformity and certificates

### Certificate

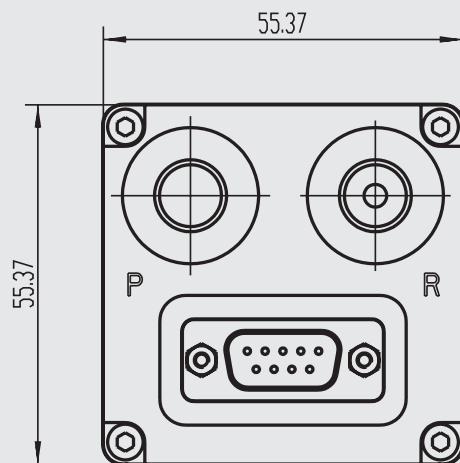
Calibration <sup>3)</sup>	Standard: 3.1 calibration certificate per EN 10204 Option: DKD/DAkkS calibration certificate
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3) Calibrated in a horizontal position.

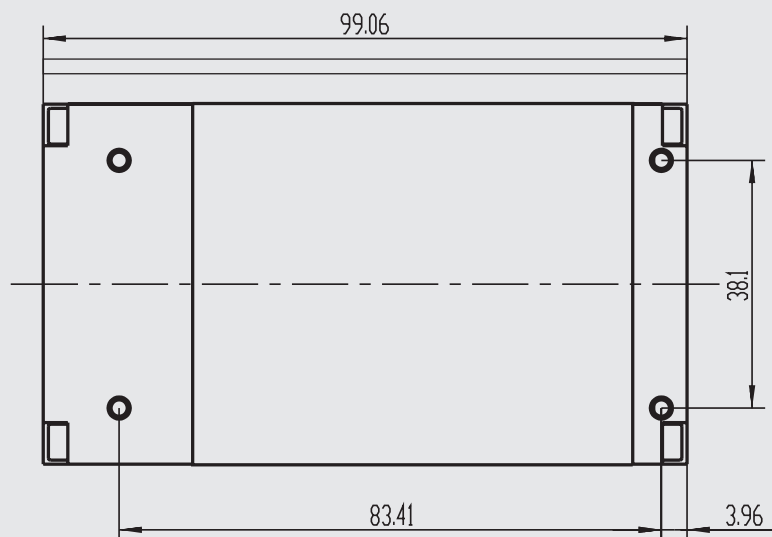
Approvals and certificates, see website

## Dimensions in mm

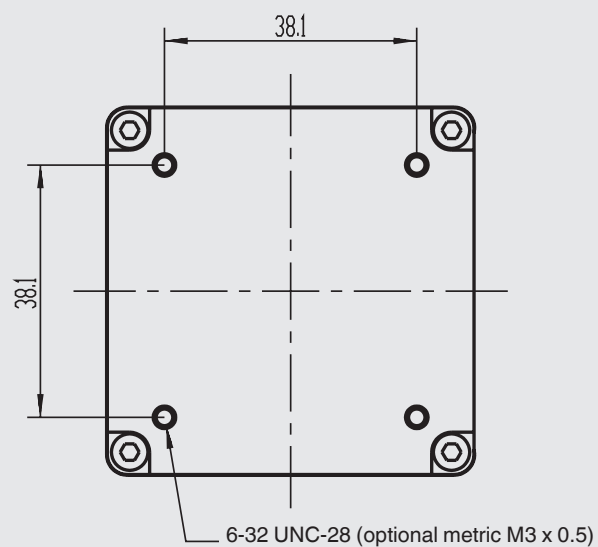
Top view



Side view



Bottom view



## Scope of delivery

- Precision pressure sensor model CPT6180 or model CPT6100
- Operating instructions
- 3.1 calibration certificate per DIN EN 10204

## Accessories

- Voltage supply over RS-232 or RS-485 interface cable
- External overpressure protection
- Pressure adapters

## Options

- DKD/DAkkS calibration certificate

## Ordering information

CPT6100 / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting position / Interface / Baud rate / Output mode / Analogue output / Mounting thread / Pressure adapter / Additional order information

CPT6180 / Instrument version / Pressure unit / Type of pressure / Start of measuring range / End of measuring range / Accuracy / Type of certificate / Mounting position / Interface / Baud rate / Output mode / Mounting thread / Pressure adapter / Additional order information

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